

**APPLICATION OF ACOUSTIC AND VIBRATIONAL ENERGY FOR
FABRICATING BUMPED IC DIE AND ASSEMBLY OF PCA'S**

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Abstract of the Disclosure

A method and apparatus are disclosed for improving a screen printing process by applying vibrational energy to assist in the print release, cleaning, and drying processes. The vibrational energy or acoustic pressure waves may be created by a transducer where the waves are transferred to the stencil or printable material through air or a vibrational interface medium. The vibrational energy in turn assists with separating the printable material from the side walls of the apertures of the stencil. The vibrational energy can further assist in the process of cleaning the stencil. The acoustic pressure can also be used in the drying process by having the waves impinge on the water droplets to atomize the droplets on the surface of the stencil. The technology can be used for the assembly of Printed Circuit Assemblies, Ball Grid Array IC Packages, Flip Chip, etc. The same technology may be applied to other cleaning processes for cleaning Printed Circuit Assemblies, tooling, and the like, whereby the cleaning processes can assist in cleaning within the cracks, crevices and hard to reach areas of connectors and other components, without undesirable heat.

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